

Eurasian watermilfoil (*Myriophyllum spicatum*) had become a pest species in the sound, but it has caused few problems since about 1978. Transects that had been sampled earlier by Kearson (1976) in 1973 were rerun in 1978 (Davis and Carey 1981). Eurasian watermilfoil biomass in the sound was about one-half that of 1973, and decreased by 1988 (Davis and Brinson 1989). The decrease in Eurasian watermilfoil biomass observed in 1978 was attributed to unusual weather conditions which contributed to water turbidity and turbulence. Widgeongrass gradually increased from 1973 to 1988, but this species has a low overall biomass in the sound. Most of the widgeongrass biomass appears in embayments and between marsh islands; these areas were poorly represented in the transects.

SAV, often dense and diverse, was present in most of the littoral of the Perquimans River in 1988. Little River also had high areal coverage and biomass of SAV, with Eurasian watermilfoil and perhaps *Potamogeton foliosus* (leafy pondweed) often in abundance. In contrast to the Perquimans and Little Rivers, the Pasquotank River was essentially barren in 1988. North River was characterized by moderate to dense Eurasian watermilfoil in creeks and embayments, and other species of SAV were present (Davis and Brinson 1989). The only significant rooted aquatic macrophyte biomass in the Chowan River in 1973-1974 was *Nuphar luteum* (yellow waterlily or spatterdock) and *Justicia americana* (water willow) (Twilley et al. 1985).

In the mid-1970's and before, SAV was common in the upper half of the Pamlico River estuary (Davis and Brinson 1976, 1989). By 1985, however, biomass had been reduced to about 1% of that of the 1970's and only widgeongrass was present (Davis and Brinson 1989). An after-the-fact analysis of the decline suggests that unusual weather conditions in 1978 contributed to the problem. Any tendency toward re-establishment of *Vallisneria spiralis* (wild celery), previously the most important species in the estuary, probably were negated by extremely high salinities prevalent in 1981 (Davis and Brinson 1989).

Wild celery reappeared in the Pamlico River in 1987 (Davis and Brinson 1989) and spread rapidly in the middle reach in 1988, whereas only traces of wild celery were present in the embayments along the western shore of Pamlico Sound. However, this species appeared stressed relative to populations in Currituck Sound and most sites in the Neuse River. The reasons for the poor growth of SAV in areas of the Pamlico River, where it once flourished, are not clear. Light attenuation appeared similar to that in a wild celery bed in the Neuse River and was less than that in a SAV bed in Currituck Sound. Epibiotic growth was generally light to undetectable on the plants in the Pamlico River at the same time in July 1989. However, high salinities and a heavy epibiotic load may have impacted wild celery growth in the Pamlico River in 1988, as we hypothesize occurred in 1981. During spring and early summer 1989, low salinities occurred following heavy rains. This reduced salinity appeared to cause an increase in health and vigor of wild celery in Nevil Creek and tributaries of the Pamlico River.

Small and generally healthy beds of wild celery now occur in a short stretch of the narrow southern littoral of the upper reach of the Neuse River estuary during 1988 (Davis and Brinson 1989). Traces of widgeongrass are present on both sides of the estuary. Assuming similar environmental conditions, the potential for areal increase of wildcelery is highly restricted by morphologic features of the Neuse River, such as a narrow littoral in the low salinity reach.

Among the tributaries of the Pamlico River, Chocowinity Bay, Blounts Creek, Bath Creek, South Creek, Goose Creek, Pungo River, Pantego Creek and Pungo Creek, had little or no SAV (Davis and Brinson 1989). The same was true for Slocum Creek, Clubfoot Creek, and Adams Creek for the Neuse River and for Bay River. SAV was sometimes present in the subtributaries in these systems.